In September, on the other hand, the opposite distribution prevailed.

From an examination of the detailed summaries it would appear that the greatest daily rainfall, 140 mm. (5·51 in.), occurred on April 1 at Livastøl, a station in lat. 59° N., long. 6° E. Only nine daily falls exceeding 4 in. were reported in the year under notice, and, with one exception, these all occurred in the south. A very useful table is given showing the height above sea-level and geographical co-ordinates of all the stations, which can thus be readily identified on the map.

R. C. M.

PLANT DISEASES IN THE WEST INDIES.

VARIOUS root diseases which cause serious loss in crops of cacao, coffee, limes, and arrowroot in the West Indies have been investigated by Mr. W. Nowell, whose conclusions are published in the West Indian Bulletin (vol. xvi., No. 1). In all cases the roots are attacked by the mycelium of species of Rosellinia, a cosmopolitan genus of fungi which has long been known to include several parasitic species. In most cases the source of infection has proved to be either the forest stumps left to decay when the land was originally cleared, or, in the case of cacao, the stumps of shade trees, such as bread fruit and avocado pear. The fungus establishes itself on the dead stumps as a saprophyte, and from these the mycelium spreads to the healthy roots of the crop. The general conditions which favour the spread of the parasites and the most suitable methods of isolating the infected area and controlling the disease are carefully discussed.

In the West Indian Bulletin (vol. xvi., Nos. 2 and 3) Mr. W. Nowell gives a first report on an investigation of the internal disease of cotton bolls in the West Indies. The young lint is badly stained, and in severe cases more or less completely rotted, by the action of bacteria or of certain specific fungi, which are described in the first of the two papers. Four distinct species of fungi have been isolated and studied in culture. They appear to be all closely related, and are probably to be referred to the genus Nematospora. Further investigation is needed, however, to determine the systematic position of the genus. The results of the experiments recorded in the second bulletin show that infection results from the attack of certain cotton-stainers, bugs. *Nezara viridula* and *Dysdercus spp.*, which puncture the ovary walls in order to reach the seeds. The damage caused by the bugs includes the death of a certain proportion of the seeds, and possibly a localised discoloration of lint in young bolls; they are, however, the agents by which the fungi and bacteria are introduced into the ovary, and there produce the characteristic boll disease.

MINERAL NOMENCLATURE AND COLOUR.

A PAPER by Mr. Edgar T. Wherry on "The Nomenclature and Classification of the Native Element Minerals" (Journ. Washington Acad. Sci., vol. vii., p. 447, August, 1917) is remarkable for its advocacy of the use of adjectival prefixes for varieties, rather than special or compound names, which involve, as may be remarked, an additional tax upon the memory. This attitude is so very rare among scientific men that the attention of all naturalists may be directed to it. Mr. Wherry thus gives us "mercuriferous silver" for one end of the amalgam series and "argentiferous mercury" for the other, while the former name swallows up arquerite, bordosite, and kongsbergite. "Rhodiferous gold" replaces rhodite and "ferriferous nickel" awaruite, josephinite, occtibehite, and souesite. The realisation that time is very often lost and not gained by the use of technical names instead of descriptive word-groupings will make mineralogists regard Mr. Wherry's work with favour. His paper, however, is much more than a revision of nomenclature, since the element minerals are critically reviewed, with a number of valuable references to recent work.

Messrs. T. L. Watson and R. E. Beard have made a careful study of "The Colour of Amethyst, Rose, and Blue Varieties of Quartz" (Proc. U.S. Nat. Museum, vol. liii., p. 553, 1917), and they conclude that amethyst is coloured by manganese, probably distributed as submicroscopic colloidal particles of an oxide; that the colouring matter in rose quartz is organic; and that the blueness of quartz, as seen in many igneous rocks, is due to the behaviour of light on minute hair-like inclusions of rutile, as previous writers have suggested. No explanation is proposed for the absence of a purple colour in certain examples of rose quartz which show on analysis quantities of manganese in excess of those in ordinary amethyst; the point seems worth raising, since the authors reject the idea that the colour in amethyst depends on the state of oxidation.

A VILLAGE COMMUNITY IN PAPUA.

IN the thirty-ninth volume of the Transactions of the Royal Society of South Australia Dr. B. Malinowski, Robert Mond travelling student in the University of London, gives a valuable account of the people living on the seaboard of south-eastern Papua between Cape Rodney and Orangerie Bay.[1]

The most important native village is Mailu, on a small island near the coast, the inhabitants of which take a prominent place in the trade of southern Papua, and in certain industries, such as pottery and canoe-building, are more advanced than the mainland people. Dr. Malinowski's descriptions refer principally to Mailu itself but the people of the mainland district, who call themselves Magi, are occasionally noticed.

Following Dr. Seligman in his account of the "Melanesians of British New Guinea," Dr. Malinowski regards the Mailu as the most eastern branch of the western Papuo-Melanesian population, the Bonabona division of the southern Massim being in contact with their eastern border. The sociology and culture of the Mailu are of the same type as those of the Koita, so fully described by Seligman. Like the Koita, too, they speak a non-Melanesian language, though this is not explicitly stated by Dr. Malinowski, whose information was obtained by means of the Motu language, which is understood by most Mailu men.

The unit of social life is the village community. The village is a compact group of houses regularly built on land. The houses, on piles, face each other on each side of the village street, with their backs to the sea and the gardens. The men's club-houses, or *dubus,* have now almost died out. The community was the joint owner of the land and fishing rights, and within certain limits of hunting rights. In legal arrangements, institutions, and warfare the community acted together. It is divided into clans, and the wife comes from outside and moves to the home of her husband. Children belong to their father's clan.

Dr. Malinowski gives details of the household, with diagrams of the building. A genealogical census of Mailu village was made to obtain the kinship system and names. Personal names of elders were found to

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[1] "The Natives of Mailu: Preliminary Results of the Robert Mond Research Work in British New Guinea." By Dr. B. Malinowski, Cracow, Robert Mond Travelling Student in the University of London. Transactions and Proceedings of the Royal Society of South Australia, vol. xxxix., Adelaide, December, 1915, pp. 494-706, plates xxvi-xliii.

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be taboo. The daily life of the natives is described, first as to the individual (toilet, dress, ornaments, and food), and then with regard to the community (seasonal occupations, courtship and marriage, children and their play, public law and the restrictions of taboo, warfare, economics). The sections on agriculture and hunting are illustrated by plans and diagrams. Fishing, trade, and industries are similarly illustrated.

In magic and religion a very prominent feature is belief in the *Bara'u,* a living man who can make himself invisible and prowls about in the night working evil magic. Some suppose him to be invisible in front, though he can be seen from behind. He can be heard, travels like the wind, and injures his victim in various ways. The ghosts, or *Bo'i,* who dwell in the preserved skulls of the dead, are not so feared. Their spirits go to a distant place.

The author deals fully with maleficent and beneficent magic and with feasting and ceremonial, both in joy and sorrow. He concludes with an account of burial customs, art, and knowledge.

Dr. Malinowski's long paper is a fine piece of work, and an extremely valuable and interesting contribution to the ethnography of New Guinea. It is abundantly illustrated by diagrams in the text, by thirty-four pictures from the author's photographs, and by a map. The paper is a credit to the society which has found such ample space for it in its Transactions.

SIDNEY H. RAY.

OIL PROSPECTS IN THE BRITISH ISLES.

MR. W. H. DALTON read a paper upon the above subject before the Institution of Petroleum Technologists on November 20. He deals in the paper with actual liquid petroleum only, and not with the potentialities of distillation from so-called oil shale, from coal, peat, or any other carbonaceous solids. He regards the widespread conception of a store of petroleum of commercial value lying intact within the limits of the British Isles as wholly untenable. Nature seems at all times since the initiation of organic life to have evolved hydrocarbons, in very variable quantity, sometimes for prolonged storage, often for rapid dissipation. In a rapid summary, in geological order, of all recorded appearances of oil or tar within the kingdom, the Carboniferous series receives most attention, chiefly from the extensive mining operations, which have revealed pockets of oil where none is seen at the surface. Those occurring in the Scotch oil shales are presumably due to natural distillation by the heat of intruded igneous rock. Others, in the Yorkshire and associated coalfields, are assigned to the alternations of terrestrial with marine conditions.

It must be borne in mind that the roof of a coal seam *ipso facto* implies a change of conditions, from terrestrial vegetation to subaqueous deposit of sediment, and this was in not a few cases brought about by subsidence, the sea often invading an area previously supporting terrestrial growth. In the Staffordshire coalfield many such marine invasions have been detected, and several in Derbyshire and Nottinghamshire. The coeval deposits of Yorkshire and Lancashire would doubtless furnish similar evidence if fully studied in this respect.

If petroleum is principally due to marine organisms, whether vegetal, animal, or of the neutral character at the bottom of either scale, such invasion furnishes at once a wider area for occupation, and abundance of dead vegetation as nutriment. Consequently, the roof of a coal seam is a watery paradise for the development of oil-making organisms, and if the deposited sands or clays are of suitable character for storage and cover, there is a chance for the formation of oil, but in no case has there been found a store of high commercial value.

Besides abundant exposure at the surface, the British geological series has for centuries been subjected to penetration by mines and borings practically throughout its thickness, and no extensive area has escaped the test of drill or pick.

It is much to be doubted whether in any part of the Secondary rocks or of the subjacent Palæozoic series there exists any deposit of petroleum of a commercial value commensurate with the cost of wild-cat search (for such it must needs be) and subsequent exploitation. Yet the Kelham and Norton instances, in the Millstone Grit and Yoredale beds respectively, demonstrate the possible occurrence of oil in deep-seated portions of series of which the wide areas of outcrop yield no similar indications. In view of our ignorance of the tectonic structure obtaining in these older rocks to the eastward of proved points, the term wild-cat is not too strong; for, although the overlying rocks indicate various tectonic movements—presumably influenced in depth by pre-existing structure—we do not know the degree of that influence, still less the extent to which the older rocks have been brought within reach of denuding agencies to form the floor on which rest the newer rocks; an anticline in the Secondaries may be "posthumously" along one of older date—it may be oblique or directly transverse to flexures that would control the accumulation of Palæozoic oil, if such exists.

It is demonstrated, then, that in the British Isles—as in other parts of the world—oil-forming conditions have frequently recurred, but to a very limited extent; and although conditions favouring its accumulation, and tectonic structures capable of conserving it from escape, are also of frequent occurrence, the conjunction of the latter essentials with original formation has generally failed. Our reservoir rocks are full of water, demonstrating the absence of liquid hydrocarbons. The curves of our anticlines and synclines serve to enhance the beauty of our landscapes, and their formation has, under favourable conditions, resulted in ore-bearing veins, but to reduce that ore, as generally for heat, illumination, and motive-power, we must continue to depend upon solid minerals of native source, and fluid combustibles imported from abroad.

The feeble and short-lived flows which our rocks exhibit necessarily conform to the same hydrostatic laws as the vast bulks of other regions, but whether from defect of original formation, of space accessible for accumulation, or of adequate seal from escape, the total result is, from a practical commercial point of view, valueless, except possibly in the one or two cases mentioned above. To geologists, negative evidence in respect of petroleum would be accompanied by so much of interest and value in other directions that their trivial share in the cost would be gladly borne, but owners who looked for royalties would be less complacent under their disappointment. Hope is more easily excited than regrets are consoled. It is scarcely necessary to say that the drill and pump constitute the final court of appeal, but the charge of hoarding petroleum is not one at all likely to be substantiated.

EXPERIMENTS ON TRIBO-ELECTRICITY.

IT is strange that tribo-electricity—that is, the subject which deals with the production of charges by rubbing together unlike materials—has been so greatly neglected by experimentalists during the last century. A dozen branches of electricity have, during

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